DOCUMENT RESUME

ED 294 860 SP 030 225

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TITLE Becoming a Woman: Considerations in Educating Adolescents about Menstruation. Revised 1988. Working Paper No. 169.
INSTITUTION Wellesley Coll., Mass. Center for Research on Women.
SPONS AGENCY National Inst. of Child Health and Human Development (NIH), Bethesda, Md.
PUB DATE 88
GRANT 16034
NOTE 30p.; Paper presented at the Conference on Research and Women in Education (12th, Washington, DC, November 1986).
AVAILABLE FROM Wellesley College Center for Research on Women, Wellesley, MA 02181 ($3.50).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Curriculum Development; Developmental Stages; *Females; Health Education; *Human Body; Hygiene; *Menstruation; *Physical Development; *Student Attitudes

ABSTRACT

This paper reports findings that have emerged from several studies conducted concerning young girls' and boys' attitudes toward menstruation. The research work discussed included: (1) cross-sectional data about menarcheal experience and about attitudes toward menstruation from early adolescent girls in grades six through nine; (2) cross-sectional data on menstrual attitudes from females and males ranging in age from 11 to 63 years; and (3) retrospective data from college-aged females about their preparation for menstruation. In reporting the results of these studies, the emphasis is upon findings that are particularly instructive to individuals interested in designing effective menstrual education materials for use by both girls and boys. (JD)

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Becoming a Woman: Considerations in Educating Adolescents about Menstruation

Although menarche, or the onset of menstruation, is probably the most important pubertal event for girls, research in college and university centers about the meaning of menarche and menstruation for young girls has until lately been scant indeed. Investigations of young boys' attitudes and thoughts about this aspect of female development are rarer still. Given a developmental literature that is lacking in information about the significance of menarche and menstruation, it is not surprising that education about menstruation in primary and secondary schools continues to be quite limited for girls, and is often non-existent, if not taboo, for boys. We believe that this generally limited education, or absence of education, about this particular aspect of being female has important consequences for girls' and boys' notions of what it means to be female.

To begin to address this important area of neglect in girls' and boys' learning, we have developed a data-based approach to menstrual education. The empirical findings from our research on the psychological significance of menstruation provide the basis for recommendations that we offer for improving education about menstruation for both girls and boys. We believe that an improved curriculum will not only expand young people's understanding of menstruation, but will also provide them with an opportunity to integrate knowledge of this aspect of being female into a broader perspective on the female gender.

Background

Menarche occurs relatively late in the sequence of pubertal changes that

girls experience. It tends to follow the growth spurt and the appearance of secondary sex characteristics, such as breast development, changes in body contour, including fat deposition, and the appearance of pubic hair. Menarche can occur as much as two and a half years after these other changes. While we know that the average age of menarche in this culture is 12.6 years (Tanner, 1977), we are not completely certain about underlying mechanisms that trigger the onset of menstruation. Skeletal maturity (Ellison, 1982), a critical weight for height, and an accumulation of fat (Frisch, 1980) have all been named as influential factors.

We know more about the broad cultural beliefs concerning menarche and menstruation than we do about the personal impact of menstruation on girls' and women's lives. We know that throughout history, menstruation has generally been depicted as a negative experience. Descriptions of the isolation of newly menarcheal girls and menstruating women from other members of society abound in anthropological descriptions of the treatment of women in various cultures (e.g., Weideger, 1975). Though the menstrual taboo has lessened to some degree in our own culture, myths about female instability and incompetence in relation to menstrual experience continue even here. Media coverage of Geraldine Ferraro's qualifications as a vice-presidential candidate included, alas, reference to her potential lack of control on "those days."

Similarly, and perhaps of more immediate concern to young girls, is the current re-emergence of an old 19th century notion - namely, that female intellectual development is curtailed by pubertal development. Proponents of the notion point to the co-occurrence of puberty and girls' diminished academic performance in some areas during the junior high school years as

ready proof for the theory.

Although we talk more openly about menstruation today, what we say is in fact a further articulation of our culture's negative interpretation of the event. Women and men use derogatory terms, such as "falling off the roof" or "the curse," when referring to menstruation (Ernster, 1975). Menstrual products, now fair game for public advertisements, are noted to be "successful" because they help to prevent "accidents." Product information, which also serves as educational material for young girls, emphasizes menstruation as a hygienic crisis and urges girls to try to "act normal" so that no one will know (Whisnant, Brett, & Zegans, 1975), thus implying that having a period is somehow abnormal, or includes the risk of acting abnormally.

In contrast to our culture's rather well-articulated negative interpretation of menarche and menstruation, there is only a small research-based set of information about the personal, psychological impact of menstruation on girls and women. Cultural beliefs have impeded investigation into the meaning of menstruation and the recognition of the potential importance of such meanings in psychological studies of girls' and boys' development.

What little interest there is in this area comes primarily from psychoanalytically-oriented clinicians who have typically drawn their conclusions from their clinical experiences, using as their sources of data mainly retrospective accounts of menarche obtained from adult women in treatment or analysis. Results from retrospective studies may not be generalizable because the data base consists of information that has been remembered, and thus is subject to distortion. Even data from adolescent

girls in treatment or analysis at the time of menarche, while of interest, is of limited usefulness, because the experience of these girls may not reflect the experience of "typical" girls. In general, results obtained from girls and women needing and accepting psychiatric treatment cannot necessarily be taken as representative of members of the general population.

Largely missing then, are studies of typical girls at or close to the time they begin menstruating, as well as studies of the menstrual attitudes and experiences of typical older females. Our research is intended to help fill this void. In this paper, we will report findings that have emerged from several studies we have conducted concerning attitudes toward menstruation. The research work we will be discussing includes (a)cross-sectional data about menarcheal experience and about attitudes toward menstruation from early adolescent girls in grades six through nine; (b) cross-sectional data on menstrual attitudes from females and males ranging in age from 11 to 60 years; and (c) retrospective data from college-aged females about their preparation for menstruation. In reporting the results of these studies, we will concentrate on those findings we feel are particularly instructive to individuals interested in designing effective menstrual education materials for use by both girls and boys.

Empirical Studies of Attitudes toward Menstruation

Our findings most pertinent to the issue at hand are those based on data from young girls and boys. Like other researchers (Brooks-Gunn & Ruble, 1977; Petersen, 1983; Williams, 1983) who have taken a multi-dimensional approach to menstruation, we have found that young girls express both positive and negative feelings about menstruation. In one of our studies (Koff, Rierdan, &

Jacobson, 1981) seventh and eighth grade girls, ranging in age from 12 to 14 and 1/2 years, were asked to read the sentence "Anne just got her period for the first time." Then, while keeping that information in mind, girls were asked to complete a number of sentence stems such as "Her first reaction was ____;" "The first thing she thought was ____;" "Anne regards her body as ____;" and "Anne's mother ____."

In conducting a content analysis of the data, two experienced clinicians assigned girls' responses to various scoring categories. In their responses, girls mentioned both that they felt good about beginning to menstruate, because it meant that they were growing up, but that it was scary and embarrassed them. The following comment, not from this study but from the journal of a premenarcheal junior high school girl, a former student of one of the authors, is a good example of how girls hold these two very different opinions simultaneously. This student wrote:

> I want (really) my period. Right now I see ____ (an older girl who was having her period for the first time) practically dying, but I want it. I know as soon as I get it I'll hate it. I try to keep it in the back of my head, or just forget about it. I just want to prove that I am growing. This all may sound silly but I feel so "immature, " I just feel like crying. I don't know why.

Unlike some researchers, who find no differences between pre- and postmenarcheal girls with respect to attitudes towards menstruation (cf. Brooks-Gunn & Ruble, 1977; Clarke & Ruble, 1978), we do find some differences in the responses of pre- and postmenarcheal girls. Data from the sentence completion study just mentioned indicate that premenarcheal girls, when asked about their reactions, were more apt than postmenarcheal girls to express excitement about the growing up aspect of menstruation; premenarcheal girls also predicted they would tell their friends and talk about it with others

when it happened. Newly postmenarcheal girls were more apt than premenarcheal girls to mention negative feelings and reactions, like feeling sick, disgusted, "grossed out," and self-conscious. They also reported that when menarche occurred, they didn't talk very much to others about it. These data suggest that at least to some degree, initial menstrual experience tempers enthusiastic anticipation of this rite of passage.

Additional information from young adolescent girls comes from data we are currently in the midst of analyzing. We have just completed a short term longitudinal study of early adolescent girls' development. Approximately 600 middle to upper-middle class white girls in grades six, seven, eight and nine, from three suburban schools systems in the Boston area, participated in this study. Data were collected twice during the school year, once in the fall, and then again in the spring. Working in groups in the school setting, girls filled out a lengthy questionnaire which included a number of inventories designed to assess various aspects of psychological functioning. Among these measures was one designed to assess girls' feelings towards menstruation.

Preliminary analysis of the first round of data collected from this study supports the finding from previous research that indeed, girls hold both positive and negative views of menstruation. We found that the measure used in the study to assess menstrual attitudes yielded two distinct attitude dimensions.[1] One dimension contains items referring to the normality and desirability of menstruation. We term this dimension "affirmation." Girls scoring high on this dimension believe, for instance, that menstruation is something to be happy about; menstruation is a sign of good health; and menstruation is a sign of womanhood. A second dimension contains items referring to coping with menstruation's more bothersome aspects. It reflects

girls' personal ability to tolerate the actual process of menstruation and we term this dimension "tolerance". Girls scoring high on this dimension do not, for example, wish that menstruation could be over in 5 minutes; they are not worried about having an accident, i.e., staining a skirt; when they have a period, they are not worried that someone will know. Scores on these two dimensions of menstrual attitudes range from 1 = not very affirming or tolerant, to 6 = very affirming or tolerant. It is important to reiterate that we found two different, and independent attitudes toward menstruation. Girls could score high on both, low on both, or high on one and low on the other. It is not, as some have suggested, that there is just one kind of evaluative attitude toward menstruation, along which girls' scores range from very positive to very negative. Overall, the girls in this study rated menstruation as something they could both affirm ($\underline{M}$ = 3.88) and tolerate ($\underline{M}$ = 4.23).

Because we wished to know whether pre- and postmenarcheal girls differed in terms of these two dimensions of menstrual attitudes, we conducted a series of analyses designed to control statistically for age, since in our sample, age and menstrual status are confounded: that is, the older a girl is, the more likely it is that she is postmenarcheal. We wanted to be able to determine whether attitudes might change as a function of age, or, as a function of menstrual status separate from age (that is, as a function of a girl's being either pre- or postmenarcheal), or as a function of some combination of age and menstrual status. Remember that data from our previous work indicated that some pre- and postmenarcheal girls expressed different attitudes with regard to menstruation.

Preliminary results from this current work, which includes a wider age

span of girls than did our previous work, indicate that pre- and postmenarcheal girls share similar attitudes towards menstruation with respect to one of the dimensions described above (affirmation), and differ in attitudes as represented by the other dimension (tolerance). The emergence of this difference in the tolerance attitude is explained by a combination of age and menstrual status.

With respect to similarities in attitude, we found that overall, girls' affirmation of menstruation does not vary with age or menstrual status.[2] All girls affirm the experience, albeit modestly; that is, they regard it as a normal event, and as a symbol of being female. The finding that this dimension of menstrual attitudes does not change with age or menstrual status suggests that it is acquired early, and is unrelated to the actual experience of the biological event of menstruation.

Differences in opinion emerge with regard to girls' coping with menstruation. For postmenarcheal girls, responses to the questionnaire suggest that the actual experience of menstruation influences their tolerance for the event. Postmenarcheal girls, for instance, are not as worried as premenarcheal girls about having "accidents," or about whether others know they are menstruating.[3] Though the relative lack of worry reflected in the data from the postmenarcheal girls implies that they are adjusting and coping at some level, the data also suggest that they are not worry free.[4] Postmenarcheal girls can cope, perhaps because they have to, not necessarily because they find it easy to do so. Interestingly, postmenarcheal girls in each of the four grades display the same level of tolerance for menstruation-their attitudes don't vary with age. It seems that menstruation brings girls

to a certain level of tolerance which does not increase, at least in grades 6 through 9, in spite of the additional access to information that might be associated with growing older as well as personal experience with menstruation.

Premenarcheal girls, on the other hand, are more worried than postmenarcheal girls, especially in the earlier grades. As they get older, however, premenarcheal girls come to be as tolerant as their postmenarcheal agemates, probably because, though they lack personal experience with the menstruation, they can draw on the experience of their peers, an increasing number of whom are postmenarcheal.

Do menstrual attitudes remain stable, or change after grade 9? If they do change, what is the nature of the this change? Data from a life span study of menstrual attitudes by Stubbs (1984) speaks to that question. Before reviewing the results, though, it is important to consider the research methodology employed. The focus of this study was the development of a questionnaire that would a) investigate menstruation as a multifaceted as opposed to a unidimensional phenomenon, b) afford respondents equal opportunity to report positive as well as negative attitudes, and c) permit people of different ages to respond so that results from various subgroups could be legitimately compared.

In designing such a questionnaire, care was taken to include items that pertained to six separate aspects of menstruation (which were identified as a result of past research and from pilot work with young girls and older females); to phrase the items in both positive and negative terms so that the questionnaire would present a balanced view of menstruation; and to word the items so that both younger and older respondents could understand them.

Items addressing the following aspects of menstruation were included:

1. Menstruation as a sign of health or illness (e.g., Menstruation reminds me to take good physical care of myself; I feel as physically fit during menstruation as I do at any other time of the month)

2. Menstruation as it impacts on the performance of certain tasks (e.g., Most women believe that their menstrual periods interfere with how well they do on intellectual tasks; Women can function as well at work when they are menstruating)

3. The physical and hygienic management of menstrual flow (e.g., When I have my period, I am worried that someone will know; Most women think that the products designed for use during menstruation are effective)

4. Menstruation as a developmental marker signifying impending maturity and/or aging (e.g., After beginning to menstruate, I looked more grown up; Menopause means that a woman is getting older and the best part of her life is over)

5. Menstruation as a symbol of reproductive capacity (e.g., When women reach menopause, most regret losing the ability to bear children)

6. An evaluation of the phenomenon of menstruation considered "in general" without reference to any of its specific aspects (e.g., Menstruation is just something women have to put up with; Menstruation is something most women are happy about).

The sample for this study included 477 middle and upper-middle class individuals (273 females and 204 males) who ranged in age from 11 to 63 years. Younger subjects were recruited from several youth groups and private schools in the suburban Boston area. Older adolescent subjects were students in Introductory Psychology courses at Boston area colleges and universities.

Adults were recruited from adult clubs, organizations and businesses within the suburban Boston area.

The first analyses of the data were intended to establish if the questionnaire measured several distinct, and internally consistent, attitudes toward menstruation. For females, four of the six scales, the health, performance, management, and general scales, were internally consistent; that is, items from these scales clustered together appropriately, and the four scales seemed to be measuring different attitudes.[5] Interestingly, for males, only two of the six subscales, the performance and general scales, were internally consistent,[6] a finding to be discussed later.

Given that some of the subscales were usefully constructed, the next step was to compare the responses of people of different ages. Results from these analyses help to answer the question posed earlier concerning how long negative attitudes persist.

Briefly, results from the study indicated that the young pre- and postmenarcheal girls had more negative attitudes toward menstruation than the older adolescent and adult women.[7] With increasing age, from early adolescence through adulthood, attitudes toward menstruation become more positive. Specifically, young girls, in comparison to older females, thought menstruation would have a negative impact on their health, had more concerns about the physical management of menstruation, thought menstruation would have a negative impact on their performance of certain tasks, and had a more negative global response to menstruation.

The more positive attitudes of the older females points to the importance of an adjustment period for younger females in which they get used to the idea

of menstruation, and become more experienced with it. How long the period of adjustment needs to be before attitudes improve is not clear from this study, since there was a six year span between the ages of the early and late adolescents. Questions to girls throughout their adolescence would tell us more about when attitudes begin to improve, and perhaps why.

The data collected from males in this study were, as noted, different from the data collected from females. Males seem to focus on the negative impact of menstruation on girls' and women's performance of certain tasks, and on a global evaluation of menstruation. Other attitudes toward menstruation of importance to females were not dimensions of concern to males. (It may be, too, that there are attitudes that males have which are not shared by females and are not tapped in the questionnaire.)

The data from males indicate that just as for females, attitudes improve with age.[8] Early adolescent boys hold the most negative attitudes of all males, and indeed of all the groups. Comments from the males participating in this study help us to understand how very negative young boys' views are and how those views change by late adolescence. Most younger boys described their reactions to menstruation as including embarrassment, being "grossed out" and disgusted. A few mentioned that menstruation might be painful because of the blood. One older adolescent explained his early reactions: "I was initially shocked about it, then I was disgusted by it. Then sorrowful for women. The disgust was a reaction to the 'dirtiness' of menstruation and the sorrow was from the fact that it was painful and uncomfortable." Many older adolescent males commented on the absence of any formal menstrual education and said that only within a close relationship with a girlfriend did they begin to develop any "real" understanding of what menstruation was all about.

Implications of Empirical Research for Menstrual Education

It is clear from the research we have reviewed that females and males of all ages hold some very negative attitudes about menstruation. A next question is whether and how such attitudes, independent of actual biological changes associated with menstruation, affect the lives of girls and women.

A study by Ruble (1977) points out rather convincingly that what people think can influence what they experience. In this study, women's beliefs about the cycle phase they were in, as distinct from their actual cycle phase, were shown to affect menstrual experiences. Subjects thought they were participating in contraception-related research in which a new technique for predicting the expected date of menstruation from an electroencephalogram (EEG) was being tested on younger women after its successful use with older women. After an experimenter pretended to monitor their responses with a simulated EEG machine, subjects were told that they were either premenstrual (period expected in one to two days) or intermenstrual (period not expected for at least a week to 10 days). In fact, according to information about menstrual histories given in a pre-participation interview, all subjects were intermenstrual. Interestingly, women who were led to believe that they were premenstrual reported a higher degree of severe physical symptoms than women who were led to believe they were intermenstrual, despite their all being at the same phase of their menstrual cycle. These results suggest that beliefs about menstruation may influence a woman's experience of her body, independent of the state of actual bodily functioning.

Although not all studies (e.g., Golub, 1976; Sommer, 1972) have demonstrated that menstrual-related beliefs actually affect body experience

and task performance, it is noteworthy that such negative beliefs are persistent and constitute an obstacle to women's self-esteem, sense of personal efficacy, and efforts at problem solving. Work by Koeske and Koeske (1975) sheds light on the ways in which menstrual attitudes may undermine women's self-perceptions and actual behavior. In their research, Koeske and Koeske gave information about a hypothetical female, Miss A, and asked subjects in their study, on the basis of the information provided about Miss A, to describe her mood and its probable causes. Part of the information provided about Miss A was whether she was about to menstruate. The results, for both females and males, were that when Miss A was described as having a negative mood, the explanation offered was the onset of menstruation, while when Miss A was described as having a positive mood, the explanation was seen to lie in other environmental events.

In discussing the implications of their results, Koeske and Koeske reasoned that if women are socialized to attribute negative moods and performance failure to menstruation, that is, to an aspect of the self over which they have little or no control, they will be unlikely to recognize other possible causes for feeling unhappy or for failure; they will be less likely, too, to develop strategies for overcoming negative mood or poor task performance. A belief in the disruptive impact of menstruation, then, can lead to a state of learned helplessness (Dweck, Davidson, Nelson, & Enno, 1978).

Given this empirically demonstrated impact of beliefs about menstruation on experience and behavior, it follows that a change in such beliefs might lead to a subsequent change in experience and behavior. This proposition, of course, brings us to the topic of menstrual education. Rather than base a

recommendation for improved menstrual education simply on the expectation that such education would lead to attitude change and hence to change in behavior, we want to inform our recommendation by reference to relevant research findings. First, we will consider evidence indicating the efficacy of menstrual education for women's experience; second, we will review findings from empirical surveys regarding important dimensions of menstrual education.

There is some research, our own (Koff, Rierdan, & Sheingold, 1982) and that of others (Brooks-Gunn & Ruble, 1983; Golub & Catalano, 1983;) which indicates that adequate preparation for menstruation affects girls' attitudes, contributes to their more positive feelings about their first menstruation, and is associated with the reporting of fewer symptoms of menstrual distress. There is some empirical base for believing, then, that more adequate menstrual education may have a substantial and long-term impact on women's lives.

Unfortunately there is little agreement about what constitutes "adequate" preparation. We can begin to approach an understanding, though, if we consider how and what adolescents acquire in the way of information and misinformation about menstruation. Most of the female respondents in our research (i.e., about 90%) report having had some information about menstruation before its first occurrence (Rierdan, Koff, & Flaherty, 1983; Rierdan, Koff, & Flaherty, 1985; Stubbs, 1984). Since we studied largely white, middle-class girls and women, we do not know the extent to which this finding applies to the population at large. Most girls, in our studies and in others, learned about menstruation from their mothers and reported that their mothers were the most important source of information about menstruation (Bloch, 1979; Brooks-Gunn & Ruble, 1979, 1982; Koff et al., 1981; Whisnant & Zegans, 1975). Some girls found their mothers helpful; some described their

mothers as neutral and matter-of-fact; still others described their mothers as scared and nervous (Koff et al., 1981). In telling their daughters about menstruation, mothers were quite unlikely to discuss the psychological and emotional aspects of menstruation and only rarely offered detailed information about physiological aspects (Bloch, 1979). They were more likely to focus on the hygienic management of menstruation - the same emphasis characteristic of educational materials and product information pamphlets (Whisnant et al., 1975).

In an effort to learn more about what girls mean when they say they feel "prepared," we (Rierdan et al., 1985) asked late adolescent girls to reflect back on their conceptions of menstruation prior to menarche. We were as interested in the kinds of misinformation girls reported as in the correct information they had acquired, since knowledge of girls' misconceptions can inform us about specific improvements that need to be made in revisions of a menstrual education curriculum.

In general, girls lacked concrete information about menstruation before their menarche. In particular, they were confused about the nature of menstrual bleeding. Perhaps associating blood with injury, many assumed that menstrual bleeding would be painful; one mentioned thinking that her vagina must be cut. Others, associating menstrual blood with urine, thought that menstrual bleeding would happen only when they went to the bathroom. This association led some to regard menstruation as a symptom of grave illness. Some were confused about the color and quality of menstrual blood. Expecting bright red, flowing blood, as from a wound, girls did not expect the brown, clotty, sluggish semi-fluid form that menstrual blood can take. The notion of flow was similarly vague. Girls mentioned wondering whether "menstrual flow"

would be a steady drip, or like a tiny bead of water running from the tap, or large amounts of gushing wetness. Finally, although most girls knew the length of a menstrual period, they were nevertheless unclear about how much blood would typically be lost during a menstrual period.

Other misconceptions about menstruation reflect particular features of the cognitive style that characterizes adolescent thinking. The first of these features, magical thinking, is represented by girls' reports of the feeling that everyone knew somehow when they were menstruating; these girls were sure that menstruation was a transparent event. Other forms of magical thinking included the belief of some girls that they alone were exempt from menstruation while it happened to everyone else, and the belief of others that menstruation was a once-in-a-lifetime event. Another aspect of girls' cognitive style led to their being surprised each month by the recurrence of menstruation. From a cognitive-developmental perspective, we can interpret the lack of planning for the next menstruation as understandable for these girls who, as early adolescents, are transitional between concrete-operational and formal-operational thought. The experience of menstruation for some of these transitional thinkers is at least initially one of being continually caught off guard, of one's normal routine being unpredictably disrupted.

One final misconception about menstruation further reflects the transitional thinking of these early adolescents. Many girls reported that they were certain about whether or not cramps would accompany their menstruation. What is of interest here is that these premenarcheal girls did not seem to appreciate the variability of menstrual experience. Instead, there was a tendency toward premature certainty about the experience - a certainty which led some to erroneous beliefs about menstruation. Some,

anticipating that cramps would accompany menstruation, were surprised to discover later that their menstruation was not painful. Others, anticipating no pain associated with menstruation, were surprised when indeed they did experience it.

Recommendations for Menstrual Education

The evidence cited above of an association between more adequate preparation for menstruation, more positive menstrual attitudes, and the reporting of fewer symptoms of menstrual distress suggests that education about menstruation has the potential for significantly affecting girls' and women's lives. Because we've been able to learn from our subjects about the information and misinformation they acquired in their formal and informal education about menstruation, we are in a good position to help in the articulation of what is meant by adequate preparation for menstruation. Here, then, are a number of guidelines we have developed concerning education about menstruation.

First, because girls' attitudes change in subtle ways during early adolescence, we advocate thinking of menstrual education as a continuing process that begins, whenever possible, before menstruation occurs and continues throughout early and middle adolescence. Currently, the most popular approach is for parents and/or educators to offer some formal education, usually in the form of a single presentation, to girls who are in the 5th or 6th grade. Such an approach does introduce a majority of girls to menstruation before it occurs and, according to our research, ought to be fairly well received by the majority of girls in these grades who, as premenarcheal girls, are relatively positive in anticipation of the event.

Such an approach, however, does not address the special needs of girls who are early or will become late maturers. About 19% of the girls we have worked with have reached menarche by the end of the sixth grade, some beginning to menstruate as early as third grade. Certainly a formal educational program scheduled for the end of fifth or the beginning of sixth grade would miss the mark for these girls. As well, the concerns of the older premenarcheal girl cannot really be addressed by education that occurs for her at a younger age, since concerns associated with the late timing of menarche will not emerge until some future date. Nor does such a program address the concerns of girls in the months after they first experience menstruation, when at least some of their attitudes toward menstruation change: their tolerance or acceptance of coping with it increases, though only to a certain degree. Perhaps with more appropriate education after menarche, tolerance could increase further still.

Although some of the research described in this paper suggests that in general, attitudes toward menstruation seem to improve gradually over the life span, we are not currently in a position to know what factors influence this gradual improvement, and therefore cannot yet identify key aspects that might serve as the basis for an intervention designed to help girls as they develop the skills needed to cope with menstruation on a regular basis. There is enough information about consistency and change in young girls' attitudes toward menstruation during puberty to suggest that a continuing program of menstrual education can best address the changing needs of girls as they mature physically. It takes time to adjust to menstrual life and our educational approach to this topic should reflect that reality.

A second point that we want to make is that in thinking about how to help

girls adjust to menstrual life, whether pre- or post menarcheally, we need to acknowledge their simultaneous positive and negative feelings about menstruation. We have seen that girls are able to acknowledge positive aspects of menstruation. Our sense is that these positive aspects, more general and symbolic in nature, are overshadowed by the more concrete concerns of managing menstruation, which are accompanied by worry. It's likely that worry about menstruation is exacerbated by mention of the negative aspects of menstrual experience in educational treatments of the topic. In such presentations, a balanced view of menstruation should prevail. Such an approach should not deny possible negative aspects, but should also highlight the positive aspects of menstrual experience. A balanced presentation would emphasize the variety of possible menstrual experiences, and an abundance of anecdotes exemplifying the many different kinds of menstrual experiences that females have during the course of menstrual life would help girls avoid adopting the belief that the <u>average</u> menstrual cycle so often described in educational materials is the <u>only</u> menstrual cycle that occurs.

A third consideration in planning menstrual education is that information about menstruation should include not only details about physiology and hygiene, but also a discussion of the emotional aspects of menstrual life. Opportunities should be available for girls to discuss their reactions to "becoming a woman" or to "being able to have a baby now." Girls might discuss with others feeling older, looking older, having their body change, and having parents and peers expect too much or too little of them now that they are "growing up." Through such discussions, adults can discover what concerns girls have about menstruation. With this information, they can be more productive in addressing girls' needs.

Fourth, and finally, information about the physiological, hygienic, and emotional aspects of menstruation must be presented in a way that matches the cognitive capacities of girls. The presentation of factual material cannot be too technical. Concrete examples, drawn from real life situations, should be included so that the nature, for instance, of "menstrual fluid" or "flow" can take on real meaning for young adolescents. Similarly, explanations of how to manage menstrual flow should include not only "how-to" explanations of pad and tampon use, but also personalized accounts of how older females learned to plan ahead, or how they managed to wear white pants, or what they did when they were teenagers and got their periods in the middle of the third quarter of the homecoming football game or at the prom and had to rush off to find supplies. Most important to emphasize, of course, in a discussion of physiology and hygienic issues, is that menstruation does not imply disease, injury, or dirtiness.

Our primary goal in menstrual education should be helping girls articulate and then deal with beliefs and concerns that they have about menstruation. With increased attention, we expect that girls will feel more comfortable about this aspect of their lives and will have more positive attitudes about menstruation immediately after, and in the many years following, their initial menstrual experience.

Such a curriculum when adapted for use with boys should retain the emphasis on the variety of menstrual experiences, and concrete descriptions. So constructed, menstrual education for boys should broaden their understanding of what their female peers are experiencing, and should provide them with a more balanced view of this aspect of female development.

As part of our ongoing work, we are developing such a curriculum for use

throughout early and mid-adolescence. We plan to describe our use of the curriculum and its impact on attitudes and menstrual experience in subsequent papers.

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Footnotes

1. Factor analysis (principal components method using varimax rotation) and scale construction analyses of the twenty-two items from a menstrual attitudes questionnaire (Brooks-Gunn and Ruble, 1977; 1982) used in the study yielded two distinct and conceptually valid attitude dimensions. Cronbach's alpha coefficients were calculated for each of these dimensions and internal consistency was high. The coefficient alpha was .70 for dimension 1 (affirmation) and .62 for dimension 2 (tolerance).

2. Multiple regression analyses, testing for the effect of menstrual status after controlling for age effects, were performed. Social age (mean age within grade), deviation age (a measure of whether girls were of average age within grade, or were older or younger than the average age), the interaction of social age and deviation age, and menstrual status served as predictors and girls' scores on the "affirmation" dimension served as the dependent variable. The regression equation was not significant: $\underline{F}(4,539) = 2.2072$, $\underline{p}<.07$. Additional analyses testing for an interaction of age and menstrual status also failed to reach significance: $\underline{F}(5,538) = 1.864$, $\underline{p}<.10$.

3. Multiple regression analyses, testing for the effects of menstrual status after controlling for age effects, were performed. Social age, deviation age, the interaction of social age and deviation age, and menstrual status served as predictors in the first analyses, and girls' scores on the "tolerance" dimension served as the dependent variable. The regression equation was found to be significant: $\underline{F}(4,539) = 3.597$, $\underline{p}<.0006$, $\underline{R}^2=.026$. Regression coefficients for social age (.1152) and the interaction of social age and deviation age (-.2076) were significant at the $\underline{p}<.01$ level or better.

In a second series of regressions analyses, we went on to explore the possibility of an interaction between age and menstrual status. In these analyses, social age (grade), deviation age, menstrual status, the interaction between social age and menstrual status, and the interaction between deviation age and menstrual status served as predictors, and girls' scores on the "tolerance" dimension served as the dependent variable. Results of these analyses suggested an equation of four variables, including social age, deviation age, menstrual status and the interaction of social age and menstrual status was sufficient to describe the data. This equation was found to be significant: $F(4,539) = 4.312$, $p < .0019$, $R^2 = .031$. Significant regression coefficients (at the $p < .05$ level or better) in the equation were .2006 for social age (grade), and -.2398 for the interaction of social age (grade) and menstrual status.

4. The mean scores for postmenarcheal girls range from 4.26 to 4.55, while the most positive score possible is 6.00.

5. The internal consistency of each subscale was inferred from the computed coefficient alphas. These were: health (7 items), .63; performance (14 items), .86; management (9 items), .67; and general (6 items), .79. Low or moderate positive intercorrelations among subscales imply that while the subscales are related to one another, they are not redundant. The subscale intercorrelations are as follows:

Subscale Correlations for Females

	Performance	Management	General
Health	.68	.42	.39
Performance		.53	.35
Management			.36

Note: $p < .01$ or better

6. For the data from males, the computed coefficient alpha for the performance subscale (13 items) was .82 and for the general subscale (5 items) was .61, and the intercorrelation between them was .11, again, indicating that the two subscales are not redundant.

7. Significant differences in the attitudes of females varying in age emerged from covariance analyses (in which menstrual status or experience was the covariate) of their responses on the health subscale, $\underline{F}(3,261) = 3.973$, $\underline{p}<.009$; the performance subscale, $\underline{F}(3,261) = 3.21$, $\underline{p}<.024$; the management subscale, $\underline{F}(3,261) = 13.558$, $\underline{p}<.01$; and the general subscale, $\underline{F}(3,261) = 6.451$, $\underline{p}<.01$.

8. Analyses of variance revealed significant differences in the attitudes of younger as compared with older males on the performance subscale, $\underline{F}(3,189) = 13.437$, $\underline{p}<.01$.